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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/784,922

02/24/2004

Martin Letz

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EXAMINER

METZMAIER, DANIEL S

ART UNIT

PAPER NUMBER

1712

MAIL DATE

DELIVERY MODE

07/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/784,922	Applicant(s) LETZ ET AL.	
	Examiner Daniel S. Metzmaier	Art Unit 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 28-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2/24/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-30 are pending.

Election/Restrictions

1. Applicant's election with traverse of the invention of Group I, claims 1-27; in the reply filed on 01 May 2007 is acknowledged. The traversal is on the ground(s) that the Office has not established that the examination of the multiple inventions would pose an undue burden on the office. This is not found persuasive because applicants have not addressed the basis of the restriction that the compositions of Group I may be employed in materially different processes such as chemical etching.

Additionally, the compositions may be used in a number of processes that do not require a photoresist layer, a semiconductor or the claimed optical arrangement of the process claims. This is clearly evidenced by the art cited herein.

Applicants remarks regarding rejoinder are noted. Rejoinder will be evaluated if and/or when allowable subject matter directed to the compositions has been determined.

The requirement is still deemed proper and is therefore made FINAL.

Response to Amendment

2. Applicants are required to provide a proper claim listing in response to this Office Action in accordance with the last paragraph of MPEP § 714 II C. (A), which states:

For any amendment being filed in response to a restriction or election of species requirement and any subsequent amendment, any claims, which are non-elected, must have the status identifier (withdrawn). Any non-elected claims which are being amended must have either the status identifier (withdrawn) or (withdrawn – currently amended) and the text of the non-elected claims must be

presented with markings to indicate the changes. Any non-elected claims that are being canceled must have the status identifier (canceled). (Emphasis added).

Drawings

3. The drawings were received on 24 February 2004 are acceptable.

Specification

4. The abstract of the disclosure is objected to because the abstract is too long. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.

Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-27 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "C(CF₃)₄", does not reasonably provide enablement for other liquids having the formula A(R)₄. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. Applicants (page 4 and claims 22-27) set forth 4-valent elements that include elements, which are generally not known to exist as 4-valent elements and further elements that have multiple valent values, e.g., Te⁺⁴ and Te⁺⁶.

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Applicants further disclose R is $-(C)_n-$ and $-(Si)_n-$, $n =$ to 10, and any remaining valencies hydrogen or halogen.

The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

(A) The breadth of the claims: all the claims are generic to the liquid and the molecules are generically set forth in claims 22-27. No species claims are set forth;

(B) The nature of the invention: the claims are directed to a liquid comprising molecules;

(C) The state of the prior art: the prior art discloses perfluoro-organic compounds and fluorinated silanes rather than polysilanes. The prior art lacks any teaching of making transition metal compounds having a valency of 4. The prior art of record lacks any description how to make a trifluorosilicide or a trifluoromethylene of a 4-valent metal.

(D) The level of one of ordinary skill: the level of one having ordinary skill in the art is varied to include chemical technicians to PhD chemist;

(E) The level of predictability in the art: the art has a predictability found in the reactive chemical synthesis;

(F) The amount of direction provided by the inventor: the specification list one single specific molecular compound, i.e., $C(CF_3)_4$, as an example but otherwise list certain classes, e.g., $A(R)_4$, wherein R is $-(C)_n-$ and $-(Si)_n-$, $n =$ to 10, and any

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remaining valencies hydrogen or halogen. There is no disclosure of a specific compound having the remaining structures "Si(SiF₃)₄", "C(SiF₃)₄" or "M(SiF₃)₄".

(G) The existence of working examples: no specific example for the disclosed and claimed liquid other than the molecular species, "C(CF₃)₄", is set forth. ". The molecule "C(CF₃)₄" has a melting point of about 72°C, about 50° C above room temperature; and

(H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure. The determination of possible synthesis of compounds and possible compounds would require undue experimentation on the part of the skilled artisan. Applicants' specification lacks guidance regarding how the skilled artisan would make said compounds having the properties. The claims and disclosure further include compounds that do not conform to accepted chemical principals, i.e., valance, and have not disclosed how said molecular compounds are employed, e.g., neat or dissolved, as a liquid.

It would require an undue amount of experimentation on the part of the ordinary skilled artisan to determine how to make the possible compounds reading on generic claim 1 and the generic structure of claim 22. In the case applicants have not enabled how the skilled artisan would make any compounds other than "C(CF₃)₄" and "tetrakis(trifluoromethyl) metals", such as tin (Sn), germanium (Ge), and platinum (Pt), known in the prior art. See *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

8. Claims 1-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims set forth a liquid for use in liquid immersion lithography but do not set forth the temperature said molecules are a liquid. The sole example of a specific molecule is set forth at page 4, line 14, as "One suited compound is $C(CF_3)_4$ ". The molecule " $C(CF_3)_4$ " has a melting point of about 72°C, about 50° C above room temperature. Said molecule is not explicitly disclosed with other specific molecules or in a specific solvent. It is unclear what temperature applicants are defining the materials as a liquid.

The compounds of claims 22-27 do not meet accepted valency requirements. Several of the elements denoted for "A" do not generally exist in the 4 valent state.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1-26 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lagow et al, US 3,992,424. Lagow et al '424 (examples and claims) discloses molecular compounds that read on the claimed compounds. See in particular examples I, III, IV, and VIII.

Since the molecular compounds are the same as those disclosed and claimed and a compound and all of its properties are generally inseparable, the properties set forth in the claims would have been expected to have been inherent to the compounds disclosed in the Lagow et al '424 reference. See *In re Papsech*, 315 F2d. 381, 137 USPQ 43, (CCPA 1963).

To the extent the Lagow et al '424 reference differs from the claims in the explicit disclosure of the optical properties, the intended use in immersion lithography, or the purity of the molecular compounds; said differences would have been obvious to one

having ordinary skill in the art at the time of the invention as a point of law and for the advantage of increased activity.

"Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection." See MPEP § 2112(III) and (V).

Since the claims and disclosure set forth structure, which is otherwise anticipated by or at least obvious as slight modifications of the disclosed structure of the reference, the properties would have been expected to be the same or substantially the same in the absence of evidence of unexpected and unobvious results.

Furthermore, "the mere purity of a product, by itself, does not render the product unobvious. *Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989)."

To the extent the claim 16 requires mixtures, it is generally *prima facie* obvious to use in combination two or more ingredients, molecular compounds that have previously been used separately for the same purpose, e.g., in isotopic separation including photodissociation (see column 4, lines 51), in order to form a third composition useful for that same purpose. *In re Kerkhoven*, 626 F.2d 846, 205 USPQ 1069 (CCPA 1980); *In re Pinten*, 459 F.2d 1053, 173 USPQ 801 (CCPA 1972); *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971); *In re Crockett*, 279 F.2d 274, 126 USPQ 186 (CCPA 1960). As stated in *Kerkhoven* and *Crockett*, the idea of combining them flows logically from their having been individually taught in the prior art.

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13. Claims 1-25 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Boutevin et al, US 5,453,528. Boutevin et al (column 7, lines 35 et seq, particularly line 35; column 8, lines 40 and 51; examples and claims) discloses inert fluorinated silane compounds that read on the claimed compounds. See in particular examples 1, 7 and 8.

Since the molecular compounds are the same as those disclosed and claimed and a compound and all of its properties are generally inseparable, the properties set forth in the claims would have been expected to have been inherent to the compounds disclosed in the Boutevin et al reference. See *In re Papsech*, 315 F2d. 381, 137 USPQ 43, (CCPA 1963).

To the extent the Boutevin et al reference differs from the claims in the explicit disclosure of the optical properties, the intended use in immersion lithography, or the purity of the molecular compounds; said differences would have been obvious to one having ordinary skill in the art at the time of the invention as a point of law and for the advantage of increased activity.

"Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection." See MPEP § 2112(III) and (V).

Since the claims and disclosure set forth structure, which is otherwise anticipated by or at least obvious as slight modifications of the disclosed structure of the reference,

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the properties would have been expected to be the same or substantially the same in the absence of evidence of unexpected and unobvious results.

Furthermore, "the mere purity of a product, by itself, does not render the product unobvious. *Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989)."

To the extent the claim 16 requires mixtures, it is generally *prima facie* obvious to use in combination two or more ingredients, inert fluorinated silane compounds that have previously been used separately for the same purpose, e.g., in polymerization, in order to form a third composition useful for that same purpose. *In re Kerkhoven*, 626 F.2d 846, 205 USPQ 1069 (CCPA 1980); *In re Pinten*, 459 F.2d 1053, 173 USPQ 801 (CCPA 1972); *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971); *In re Crockett*, 279 F.2d 274, 126 USPQ 186 (CCPA 1960). As stated in *Kerkhoven* and *Crockett*, the idea of combining them flows logically from their having been individually taught in the prior art.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kirii et al, US 6,846,473, is considered cumulative to the above rejections of claims 1-26, under 35 USC 102(e)/103(a).

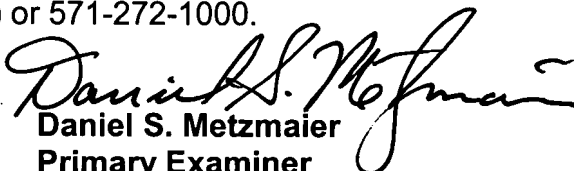
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (571) 272-1089. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (571) 272-1302. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Daniel S. Metzmaier
Primary Examiner
Art Unit 1712

DSM